SPACE TEST PROGRAM STATUS REPORT

This status report is published semi-annually by the Space Test Program Office, in accordance with Program Management Directive 2140(42), paragraph III (12). It is distributed to SAF/AQSL, to members of the Space Experiments Review Board, to STP experimenters, and to other organizations upon request. For changes to the distribution list, please contact SMC/TELO, 3550 Aberdeen Ave SE, Kirtland AFB NM 87117-5776, DSN 246-6406, (505) 846-6406.

16 April 2001 **Volume 6, Issue 2**

Space Test Program (STP) Mission:

The Department of Defense (DoD) Space Test Program (STP), part of the Air Force Space and Missile Systems Center Space and Missile Test and Evaluation Directorate, advances space system technology by providing spaceflight for technologies generated within the entire DoD space research and development community. The program supports these technologies according to priority based on relevance to existing military requirements and the availability of cost-effective means of spaceflight.

"Commander's Corner"

Col James A. "Mouse" Neumeister
Program Director, STP

My whirlwind STP experience continues as I completed my first year at the helm on Valentine's Day. Despite launch "doldrums", we have an incredible amount of future mission activity going on, from attending to the health and continued successful on-orbit operations of ARGOS (approaching the end of its 2nd year of on-orbit ops and data collection, thanks to the economizing efforts of our teammates in the R&D Space and Missile Operations program), TSX-5, MightySat II.1, and MACE-II (first science payload on the International Space Station—great job by Mr Dave Hess and the entire STP Houston!).

We have just finished a very detailed and time-consuming spacecraft and launch service source selection for C/NOFS, following its 3-year run as the #1 SERB payload. Lt Col Dave Parris, Chief of STP's Tri-Service Spacecraft Division (SMC/TELS) and Source Selection Team Chairman, has led a dedicated team of STP and AFRL/VS members through this source selection and has identified a contractor quite capable of helping STP deliver another successful mission. C/NOFS represents a significant investment of STP dollar and people resources over the next 4 years. The payoff will be the development and demonstration of the ability to forecast scintillation effects on communication and navigation systems critical to warfighter operations.

While we may be in launch doldrums for a while, we've shortened just how long that will be with what has

become our Kodiak Star mission. This quick-reaction team effort with NASA leverages their Athena I launch vehicle to provide a spaceflight opportunity for PICOSat (finally!), PCSat and Sapphire, along with NASA's Starshine III spacecraft, out of Kodiak Island AK with an ILC of 31 August 2001. STP's Mission Design and Management Division (SMC/TELO), led by Maj Paul Hesse, did an outstanding job of shifting gears from a proposed Minotaur launch vehicle and building this cooperative mission with NASA in the span of about 3 weeks, at half the cost of the Minotaur. I keep telling TELO our ultimate objective is, "Money for nothin', and spaceflight for free", but perhaps that's only achievable in classic rock songs. Regardless, TELO does a fantastic job of squeezing the maximum number of spaceflight opportunities out of STP's budget every year.

As always, or so it seems, fiscal resources are tight. Our challenge to hold the line on the STP top line, let alone grow it to the right-sized $80M ideal budget we presented at the November 2000 SERB meeting, is now even more challenging with the transfer of STP programming responsibility to Air Force Space Command. We have been working hard to educate AFSPC on the long term benefits of STP to future operational space systems and trying to garner AFSPC support while the command is faced with near-term operational system bills. Thanks to the support of SMC/CC and AFSPC/CV, we succeeded in averting a proposed 10 percent cut across the FYDP and holding the line on the STP topline this year. What became painfully clear during this exercise is that everyone associated with STP—the members of the program office itself, the members of the SERB, the primary investigators (PIs)—must recognize and advertise the military relevance of the technologies we fly and continuously voice support for the program. I was impressed with many of the PI presentations at the November 2000 SERB and how they made the connection between their technologies and warfighter requirements. Everyone needs to do this all the time, and must continually tie our technologies to documented requirements, including the Defense Planning Guidance (DPG), CINC Integrated Priority Lists (IPLs), the Air Force Annual Planning and Programming Guidance (APPG), the AFSPC Strategic Master Plan (SMP), and other and other requirements-like references. This warfighter connection must be in everything we use to describe STP programs. Welcome to the big dogs' Planning, Programming, and Budgeting System (PPBS)!

In addition to the very full "standard" STP workload, we continue to evolve future opportunities. We have crafted our DOD secondary payload management concept of operations (CONOPS). Since presenting it at the November 2000 DOD SERB, we have taken it to SMC/CC and received a very positive thumbs up. The key implementation hurdle is manpower resources, and so SMC/CC tasked us to put together a smaller startup package, which we have done. Our next briefing stop is AFSPC at a date to be determined. However, I had an opportunity to make some whistle stops in DC recently, including one with SAF/SX, the source of this secondary payload management CONOPS task, who I provided an update to and who was also very supportive.

While we haven't moved forward quite as fast as we would have liked on a 'few' other projects, we've made significant progress on documenting and improving our processes so that we can better exploit lessons learned and successes from the past, avoid pitfalls, and provide those that come behind us a quick spin-up on our business. We've built the capability on the STP Intranet to write, approve, and post these process descriptions electronically, without ever having to print a hard copy, have assigned initial taskings identifying who's responsible for what process descriptions, and begun the hard part—the actual writing. The ultimate objective remains the complete pre-SERB-through-STP-funded-ops process residing on the STP Intranet, with hotlinks to all process descriptions, exportable and printable in an operating instruction format so we can share this process information with you, our customers, teammates, and supporters. Target initial operational capability (IOC) for the Intranet-based portion of this tool is June 2001.

Speaking of the STP Intranet, in addition to the STP process, we've begun organizing and migrating all softcopy STP material worth saving to the Intranet where it can be logically organized, easily searched, and smartly referenced. We're also tackling the STP Internet web site with a plan to not only update, but employ as an information technology tool for our widely-dispersed mission teams.

I am still working to get broader multi-service representation on the STP staff, and have initiated discussions with the Naval Research Laboratory and the US Army's Space and Missile Defense Command to increase our cross-service billets. While awaiting these additional resources, our current team of blue suiters, USN LT, government civilians, FFRDC, and SETA personnel continue to do an awesome job of tackling the tremendous breadth of program, mission, fiscal, and contractual challenges. Our biggest challenge remains moving forward on all the missions and initiatives I've described without overtaxing these most valuable resources. The "body count" continues to be a major concern: since my Day 1, we've lost nine highly-qualified captain and captain-select acquisition managers and spacecraft engineers and gained one experienced satellite operator and four energetic second lieutenants. While we're forecast to gain one major and two captains, we're also projected to lose an experienced major, captain, and first lieutenant, keeping us red on the personnel balance sheet. We continue to work the personnel issue hard. If you have or know anyone who'd like to get their hands dirty doing very fast-paced satellite mission design, acquisition, and operations, please give us a call!

One thing hasn't changed since our last STP Newsletter, and that's the fact that you can be extremely pleased and proud of the work done by the entire STP team making these past, present, and future missions successful realities, and getting the SERB the most "business for the buck" (note I didn't say "bang" this time).

I enjoyed the chance to talk to many of you at the November 2000 DOD SERB, and look forward to seeing you at the April 2001 mid-cycle update to the SERB, but don't wait until then if there's issues we need to discuss and address. We welcome your feedback, and will continue to work hard to meet the technology needs of the DoD

community. We're your Department of Defense Space Test Program—getting technology to space for the warfighter!!

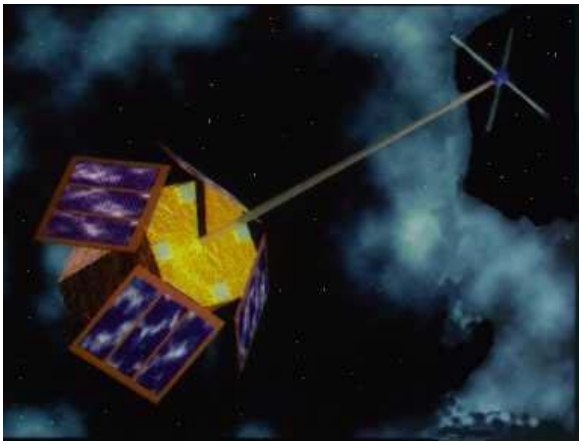
2000 DoD SERB Process Results:

In order to convene the SERB prior to the services' POM cycle, the 2000 DoD SERB was rescheduled from April to November. The 2000 SERB was held 14-16 November in Crystal City, Virginia, at the ANSER Conference Center. The results of the 2000 DoD SERB are listed below:

1. **IOMI** - Indian Ocean METOC Imager
2. **CFE** - Cibola Flight Experiment
3. **TechSat21** - Technology Satellite of the 21st Century
4. **SHIMMER** - Spatial Heterodyne Imager for Mesospheric Radicals
5. **IMAGE** - Ionospheric Mapping and Geocoronal Experiment
6. **OISL** - High Speed Optical Intersatellite Link
7. **ADS** - Atmospheric Density Specification
8. **RAIDS** - Remote Atmospheric and Ionospheric Detection System
9. **OMPS-AE** - Ozone Mapping and Profiler Suite - Acquisition Experiment
10. **TIMS** - Tactical Ionospheric Monitoring System
11. **Orbital Express** - Orbital Express Advanced Technology Demonstration
12. **STL** - Space Tissue Loss
13. **ISUS(SOTV)** - Integrated Solar Upper Stage
14. **MU-SIGMA** - Growth of High Aspect Ratio Microstructures for Signature Management
15. **SPHERES** - Synchronized Position, Hold, Engage, and Reorient Experimental Satellites
16. **CHAWS-LD** - Charging Hazards and Wake Studies
17. **ANDE** - Atmospheric Neutral Drag Experiment
18. **SIMPLEX** - Shuttle Ionospheric Modification with Pulsed Localized Exhaust
19. **VALPE** - Vibro-Acoustic Launch Protection System
20. **MEGA** - Medium Energy Gamma-Ray Instrument
21. **MESA** - F Region Ionospheric Studies with the Micro-Electrostatic Analyzer
22. **DODS** - Destructive Orbital Debris Sensor
23. **REEPER** - Relativistic Electron and Energetic Proton Experiment
24. **CITRIS** - Computerized Ionospheric Tomography Receiver in Space
25. **CERTO** - Coherent Electromagnetic Radio Tomography
26. **GUANDSO** - Global Upper Atmosphere Neutral Density Measurements by Stellar Occultations
27. **MEPSI** - MicroElectroMechanical Based Autonomous On-Orbit Satellite Inspection Experiment
28. **SIXI** - Silicon X-Ray Imager
29. **NPSAT1** - Naval Postgraduate School Spacecraft Architecture and Technology Demonstration
30. **WSSP** - Wafer Scale Signal Processing
31. **ACSBIRS** - Active Cleaning Experiment for SBIRS-LOW
32. **MEMS2** - MicroElectroMechanical Systems For Space Applications, Flight 2
33. **OTTI** - Orbiting Technology Testbed Initiative
34. **LiBFLT** - Lithium Ion Battery Space Flight Test

OPERATING FREEFLYERS

REX II Is Operating Fine at Naval Academy!



REX II has more than fulfilled its mission of collecting data for Air Force experimenters. In a reprise of what was reported earlier, over the past year, REX II has been minimally manned by SMC/TEO's RDT&E Support Complex (RSC) because it enters a "beep/receive" mode if it is not contacted on a regular basis. The beep/receive mode causes interference among other satellite communications. On 9 May 2000, Col Neumeisterturned control of REX II over to Academic Dean and Provost William C. Miller of the US Naval Academy to fulfill this maintenance mission and augment the training of Navy midshipmen on satellite operations.

The US Naval Academy has a small operations center in Rickover Hall at the Naval Academy where a number of student and amateur satellites are being built and supported. Using REX II in this way allows midshipmen the opportunity to learn satellite operations on a live Air Force asset.

To make this turnover a reality, the Naval Academy needed hardware critical to communicating with the REX II satellite. Computers, antennas, and transceivers were moved from the Orbital Sciences Corporation McLean, Virginia site and assembled at USNA in April 2000. Following a test and checkout period, Naval Academy personnel took over control and responsibility for maintaining REX II.

"We will train the midshipmen in operation procedures. This will give them direct satellite experience," said Air Force Lt Col. Billy R. Smith Jr., associate professor of engineering at the Naval Academy. Both STP and USNA were delighted to take part in the chance to further our longstanding relationship. Since the turnover, there have been no major problems either with the satellite itself, or with the operations conducted by the USNA.

Operations of REX II by the USNA have saved STP some of the cost of operating it out of the RSC and contributed to valuable training for USNA personnel.

- *Capt Mark Zelinka, Mission Manager, SMC/TELS, DSN 253-7652, (505) 853-7652*.

ARGOS (P91-1)

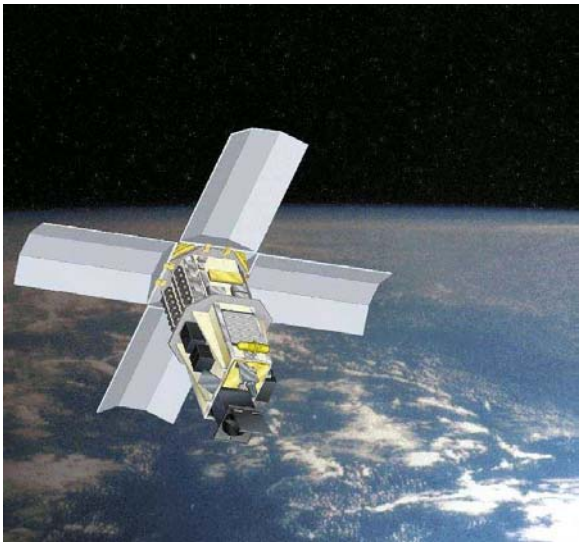
The Advanced Research and Global Observation Satellite (ARGOS) is approaching the completion of its second year on orbit (launched 23 Feb '99). To date, the mission has been a tremendous success. Since our last newsletter, two of the experiments have had significant failures. The High Resolution Airglow and Aurora Spectroscopy (HIRAAS) experiment's Ionospheric Spectrosocopy And Atmospheric Chemistry Experiment (ISAAC) had a high voltage power supply failure and is no longer operational. The High resolution

Ionospheric & Thermospheric Spectrograph (HITS) and Low Resolution Airglow and Aurora Spectrograph (LORAAS) continue to collect good data. Additionally, the Unconventional Stellar Aspect (USA) experiment experienced a gas leak in its redundant detector (primary detector experienced a leak in June '99) and depleted all its gas supply in early December of last year. The depletion of gas marks the end of the x-ray astronomy portion of their experiment, but experimentation is expected to continue with their flight computers.

Funding for operations beyond April 2001 still remains an open issue. Currently, only a minimum amount of funding is available from the experiments and other interested agencies, but it is expected that funding will support operations into summer 2001. Additionally, funding from Office of Naval Research (ONR), Ballistic Missile Defense Organization (BMDO), or SMC/TEO may be made available to continue operations. The ARGOS program office should make a final decision for year three operations within the next several months.

- Capt Jon Sorbet, Mission Manager, SMC/TELS, DSN 263-3546, (505) 853-3546.

MTI (P97-3)



The Department of Energy's Multi-spectral Thermal Imager (MTI) satellite was successfully launched into orbit on 12 March 2000 through a united effort across the SMC/TE organization. STP, together with the Rocket Systems Launch Program (RSLP), and SMC/TEV Western Range support made the Taurus launch a phenomenal success. After a few setbacks early in the launch campaign, the MTI countdown went flawlessly. The MTI satellite, ranked #3 by the 1996 DoD SERB, was placed into a precise orbit by the fifth launch of the Taurus Launch Vehicle built by Orbital Sciences Corporation.

MTI has demonstrated space-based multi-spectral and thermal imaging technology for military and civilian applications including counter-proliferation and non-proliferation. The MTI science team has successfully collected data over the past eleven months with the satellite and

instruments performing exceptionally well to date. The 1300-pound, three-axis stabilized spacecraft is flying in a 575 km sun-synchronous orbit on a three-year mission.

The Hard X-Ray Spectrometer (HXRS), rated #5 of 33 by the 1996 DoD SERB, is co-manifested as a piggyback experiment on the MTI spacecraft. The HXRS sensor design gives advanced warning of Hard X-Ray Solar events. HXRS weighs 6.5 kg and consumes 6 watts of power per orbit. Advanced knowledge of Hard X-Ray events can prevent damage to orbiting spacecraft and prevent radiation injuries to astronauts. The HXRS science team has successfully received data with superior on-orbit instrument performance.

- Lt Col David Parris, Chief, Tri-Service Spacecraft Division, SMC/TELS, DSN 263-6623, (505) 853-6623

TSX Mission 5 (P95-2)

STP's Triservice Experiments-5 Mission (TSX-5) was successfully launched into a 400 Km X 1705 Km orbit at 69 degrees inclination on 7 June 2000. TSX-5 carries two DoD sponsored SERB payloads, the Compact Environment Anomaly Sensor (CEASE), sponsored by AFRL Space Vehicles Directorate, Hanscom AFB, MA and BMDO's multi-national, highly synergistic Space Technology Research Vehicle-2 (STRV-2).

TSX-5 completed on-orbit checkout on 23 June 2000 and reached the required six-month mission lifetime on 23 December. SMC/TEO continues to diligently operate TSX-5 from the RSC, which is co-located with STP.

Before launch, the TSX-5 team had to overcome several critical issues relative to the spacecraft's ability to maintain clock discipline with GPS time. Ultimately a combination of a software patch and an operational work-around were instituted. This delayed launch a week.

Launch was again delayed to investigate a LV problem with the Pegasus XL. The problem related to the battery charging system and was not found by Orbital Sciences Corporation (OSC), the spacecraft builder and launch provider, until the day before LV rollout. This time launch was only delayed for one day.

Despite these two setbacks at launch base, TSX-5 enjoyed a near flawless launch aboard the Pegasus XL rocket and recently achieved its 6-month mission life milestone. Both CEASE and STRV-2 are providing valuable science data for their respective organizations.

CEASE, a space radiation environment monitoring experiment, has proven to be especially valuable in providing event correlated space environment data for SV anomalies believed to be due to extraordinary radiation levels resulting from the current solar max cycle.

STRV-2 has proven an all-composite bus structure, collected new data on reliability of electronics and space materials degradation, taken many MWIR images, and is currently receiving promising data demonstrating autonomous vibration isolation for the MWIR. Only one experiment on STRV-2, a high data rate, space-to-ground laser communication experiment has failed to work so far. The experiment has yet to be considered dead.

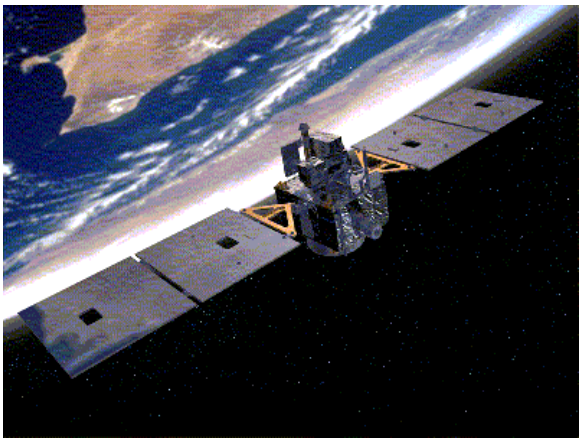
TSX-5 has a mission lifetime goal of one year. Recently, STP negotiated an extended contract with OSC for anomaly resolution support during the second 6 months of on-orbit mission operations. Both AFRL/VS and BMDO are excited about the success of the mission and the opportunity to collect valuable science data past the required 6-month mission lifetime.

As we look into the future, STP will be developing an end-of-life plan for TSX-5. This may include continued mission operations, drag studies or other space science, spacecraft operations training for RSC personnel, or opportunities for students at the Air Force Academy or other universities to operate an on-orbit satellite.

- *Capt Kevin Benedict, Mission Manager, SMC/TELS, DSN 246-8723, (505) 846-8723*

MightySat II.1 (P99-1)

MightySat II.1 is the second satellite in the Air Force Research Laboratory (AFRL) MightySat series. It ranked #2 on the 1998 DoD SERB list. STP is teamed with AFRL and has funded the majority of ground operations for MightySat II.1 and contributed funds for launch services. The objective of the MightySat series is to provide space flight for AFRL technologies.



MightySat II.1 was successfully launched on Minotaur II into a 300 nm orbit with a 97.6° inclination on 19 July 2000. On-orbit operations are being conducted from the SMC/TEO RDT&E Support Complex (RSC) at Kirtland AFB, NM.

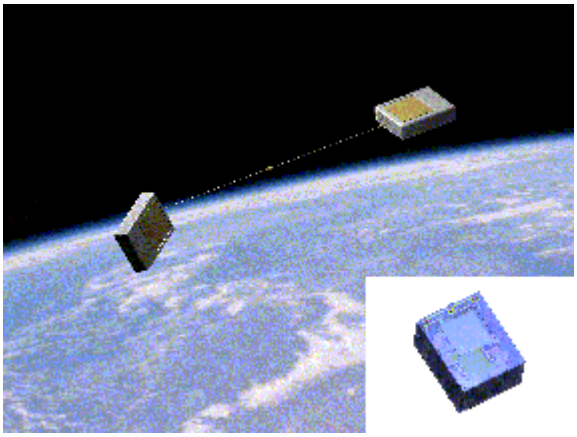
MightySat II.1 carries a total of ten experiments. The primary experiment is the Fourier Transform Hyperspectral Imager (FTHSI). FTHSI is a proof-of-concept of space-based Fourier transform hyperspectral imaging technology. FTHSI has 145 spectral bands, a spectral region between 470-1050 nm, a swath length of 20 km, and a swath width of 13 km. The experiment is designed to take one picture every three days. The other nine experiments include: the Quad-C40 processor (QC40), the Shaped Memory Alloy Thermo-Elastic Tailoring Experiment (SMATTE), a PicoSat Launch Assembly (PLA), a Multi-functional Composite Structure, a Solar Array Concentrator (SAC), a Solar Array Flexible Interconnect (SAFI), an active tracker, the NRL mini SGLS Transponder (NSX), and finally a new type of solar array substrate structure.

Currently, MightySat II.1 is operating nominally. The team has collected over 60 hyperspectral images to date and has recently increased the operations tempo beyond pre-launch expectations. MightySat is scheduled to perform cooperative image collections with AVRIS and TSX-5. The SMATTE experiment is performing nominally at twice the predicted rate. Payload operations will continue at least through August 2001. The PicoSats are currently scheduled to be deployed in July 2001.

- *Capt Mark Mocio, Mission Manager, SMC/TEL, DSN 246-9323, (505) 846-9323*

OPERATIONAL PIGGYBACKS

MEPSI



The Air Force Research Lab (AFRL) MEMS-based Picosat Inspector (MEPSI) was developed to enable a new, low power, autonomous, on-board space system to be used in support of critical satellite operations. This is done through investigating the functionality of MEMS-based subsystems in the space environment and by demonstrating the capability of deploying an on-board miniature autonomous inspector, tasked to conduct visual inspection of the host satellite.

The MEPSI mission is composed of six precursor flights in order to validate the technology prior to the final flight of the MEPSI experiment. The first of these flights took place in February of 2000 when the first picosats were deployed from the JAWSAT/OPAL spacecraft. This mission was a complete success. The second precursor flight is currently on board MightySat II.1, which was launched in July of 2000. Currently the picosats are awaiting deployment.

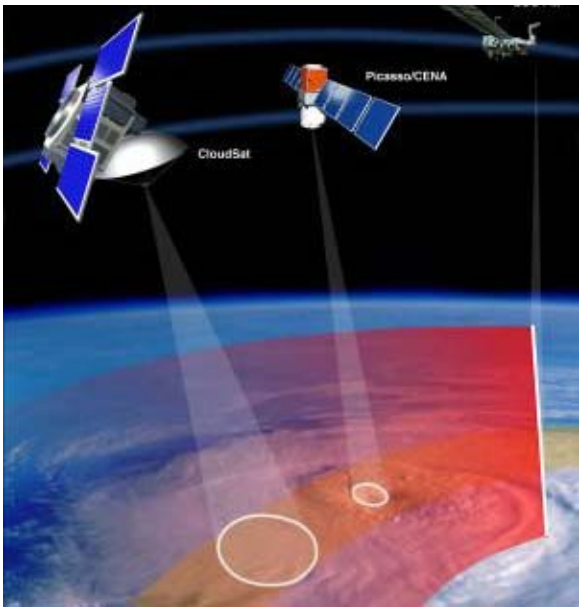
- *Lt Lee Philley, Mission Manager, SMC/TELO, DSN 246-6406, (505) 846-6406*

MANIFESTED FREE FLYERS

CloudSat (P00-4)

The CloudSat program has gone through several changes and achieved many notable milestones in the past year. STP and the Jet Propulsion Laboratory (JPL) have worked hard to develop the operations concept for the CloudSat mission. STP, SMC/TEO, and JPL have completed the first of many Mission Operations Working Group meetings that will serve as a communication link between the satellite operations team (SMC/TEO), program management (STP and JPL), the spacecraft developers (Ball Aerospace and Technology), and the Primary Investigator (Dr Greame Arnold). After an intensive Preliminary Design Review, CloudSat was confirmed as an official mission under NASA's Earth System

Science Pathfinder (ESSP) program. The CloudSat mission will provide cloud base measurements to the DoD and scientific communities. One of the significant changes to the program is that CloudSat will now formation fly with NASA's Aqua satellite due to be launched from Vandenberg AFB in July 2001.



The CloudSat program now moves into the implementation phase with the next big milestone being Critical Design Review in August 2001. The CloudSat team at JPL has been working with STP and SMC/TEO to define the satellite design features and formation flying concepts that will allow the mission to be flown out of the RDT&E Support Complex (RSC) at Kirtland AFB, New Mexico. CloudSat was ranked #21 of 40 by the 1999 DoD SERB and is scheduled to launch in May 2003.

- Capt Kevin Benedict, Mission Manager, SMC/TELS, DSN 246-8723, (505) 846-8723

C/NOFS (P00-3)

The Communication/Navigation Outage Forecasting System (C/NOFS) experiment consists of a suite of seven instruments and a Data Processing Unit (DPU) designed to specify and forecast ionospheric scintillations in the Earth's magnetic equatorial region. These scintillations degrade the performance of communication, navigation, and surveillance systems that rely on trans-ionospheric radio wave propagation. C/NOFS was the #1-ranked experiment on the 1997, 1998, and 1999 SERB lists. In March 2000, C/NOFS was also designated an Advanced Concept Technology Demonstration (ACTD) program by the Under Secretary of Defense for Acquisition, Technology, and Logistics.

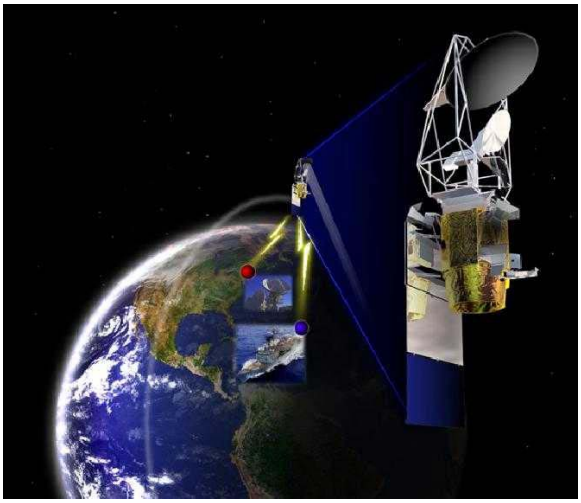
The Air Force Research Laboratory Space Vehicles Directorate (AFRL/VS), Naval Research Laboratory, NASA/Goddard Space Flight Center, University of Texas at Dallas, and the Aerospace Corporation will provide the C/NOFS instruments and DPU. AFRL/VS, developer of the C/NOFS concept and Mission Principal Investigator, has responsibility for overall management of the payload development effort. AFRL/VS is also developing a C/NOFS Data Center at Hanscom AFB, Massachusetts, to spearhead the scintillation modeling and forecasting effort.

STP will provide the spacecraft bus, payload integration and testing, and a commercial launch service to place C/NOFS in orbit, and funding for 1 year of on-orbit operations by SMC/TEO. Source Selection for the spacecraft provider (who will also provide the commercial launch service) is complete.

C/NOFS will nominally launch in late 2003 into a 710km by 400km elliptical orbit at 13^{o} inclination. C/NOFS will operate first in "Survey Mode", where scintillation phenomena will be studied and ionospheric models will be verified and upgraded as needed. Approximately 9-10 months after launch, operations will transition to "Forecast Mode," where C/NOFS will attempt to forecast scintillation events. As stated previously, STP is funding 1 year of on-orbit operations. To further build on the ACTD part of the program and lay the groundwork for a future operational system, AFRL/VS hopes to operate C/NOFS in Forecast Mode for an additional 2 years to demonstrate the utility of C/NOFS for operational users.

- Capt Scott Haskett, Mission Manager, SMC/TELS, DSN 246-8570, (505) 846-8570

Coriolis (P98-2)



STP contracted the Coriolis satellite under NASA's Rapid Satellite Acquisition (RSA) process**.** Coriolis consists of the ONR sponsored WindSat (built by NRL) and the AFRL-sponsored Solar Mass Ejection Imager (SMEI) built by the University of Birmingham and the University of California San Diego. Coriolis will launch on a Titan II from Vandenberg AFB into an 830-km sun-synchronous orbit at 98.7° inclination.

The NRL has its WindSat engines all ahead full, but vendor deliveries are slowing its delivery to STP. All flight structural members are in house, but some of the front-end electronics are still to be received. The Bearing and Power Transfer Assembly (BAPTA) is now in acceptance test, along with the momentum wheel and the flight feed horns. Unfortunately, due to the critical path nature of the front-end electronics, integrating WindSat with the spacecraft bus, originally expected to occur in April of this year, will be delayed until August 2001.

The SMEI experiment is flying VFR-direct straight through its test program. SMEI has completed thermal balance testing, shock testing, and vibration testing. The next step is electromagnetic interference and compatibility testing, which is scheduled to complete by the middle of this month. All testing to date has been successful, and SMEI is on track to begin bus integration in April.

Spectrum Astro is also charging full steam ahead. The flight structure is built, and is now integrated with the flight wiring harness. The activities of the past months have primarily involved integrating engineering model electrical components (almost identical to the flight electrical components) with the bus structure and flight harness. The next couple months include a high-tempo schedule of integrating flight hardware onto the bus, and completing the integration with an Integrated System Test (IST). Once the IST is completed, the program will hold its

Experiment Integration Readiness Review (currently expected to occur early March 2001). Thus far, only minor problems have been encountered – none affecting the spacecraft's readiness for SMEI integration.

Coriolis, originally scheduled to launch in December 2001, is now projected to launch no earlier than March 2002. Obviously, many programmatic impacts can be expected with this type of delay, but the entire team is working hard to minimize those impacts. The program schedule has been shifted around, and extra testing will be done during "down" time to not only stay familiar with the spacecraft, but also to find as many "little things" as we can.

- *Maj Paul D. Dotzler, Mission Manager, SMC/TELS, DSN 246-7042, (505) 846-7042*

MANIFESTED SECONDARIES

CMEWS (S-006)

Ranked 14th on the 1999 SERB list, STP is contributing funds for the integration of the CMEWS (Coronal Mass Ejection Warning System) onto the NASA-sponsored STEREO spacecraft. CMEWS constitutes a major part of the Sun-Earth Connections Coronal and Heliospheric Investigation (SECCHI) instrument package that was selected by NASA to fly on the STEREO mission. It was chosen through peer-reviewed open competition.

The primary objective of STEREO is to study coronal mass ejections (CMEs): why they occur, how they evolve as they propagate through the outer corona and solar wind, and how they cause geomagnetic storms and other space weather disturbances. Two of the most critical instruments for achieving these goals, as identified by the STEREO Science Definition Team, are the COR2 coronagraph and the Extreme Ultraviolet Imager (EUVI) which form the heart of CMEWS.

The Naval Research Laboratory (NRL) will provide management and scientific leadership for the CMEWS program. Collaborating institutions providing hardware include NASA Goddard Space Flight Center, the Lockheed-Martin Solar and Astrophysics Laboratory, the Institut d'Astrophysique Spatiale in France, the Mullard Space Science Laboratory, the Rutherford Appleton Laboratory, the University of Birmingham in England, and the University of Kiel and Max-Planck Institut fur Aeronomie in Germany. The Applied Physics Laboratory will build the spacecraft at Johns Hopkins University, and the mission will be launched and operated by NASA. Management, analysis, and archiving of CMEWS data will be performed by NRL.

- *Lt Demian Bailey, USN, Mission Manager, SMC/TELO, DSN 246-8704, (505) 846-8704*

FAME (S-007)

The 16th ranked experiment on the 1999 SERB list is FAME (Full-sky Astrometric Mapping Explorer). STP will contribute funds to offset launch costs for FAME which was selected by NASA's MIDEX program over more than 30 other proposals as a space telescope designed to obtain highly precise position and brightness measurements of 40 million stars. This rich database will allow astronomers to accurately

determine the distance to all of the stars on this side of the Milky Way galaxy, detect large planets and planetary systems around stars within 1,000 light years of the Sun, and measure the amount of dark matter in the galaxy from its influence on stellar motions. It will also provide precise astrometric star positions needed for DoD requirements.

FAME is a collaborative effort directed by the U.S. Naval Observatory (USNO) and includes Lockheed-Martin Missiles and Space Advanced Technology Center for the instrumentation, the Naval Research Laboratory for the spacecraft bus and systems integration, and the Smithsonian Astrophysical Observatory for verification and synthesis of the scientific measurement system. USNO will provide the management and scientific leadership for the project and perform the data management, analysis and archiving.

- *Lt Demian Bailey, USN, Mission Manager, SMC/TELO, DSN 246-8704, (505) 846-8704*

MANIFESTED PIGGYBACKS

CEASE (S97-1) and CERTO PLUS (S97-2)

The Compact Environmental Anomaly Sensor Experiment (CEASE) ranked #1 at the 1996 SERB has been manifested on STRV-IC. CEASE, a low power instrument designed by AFRL/VS, monitors the environment around a spacecraft and provides alerts when the environment will cause surface charging, deep dielectric charging, single-event upsets and radiation dose effects. The spacecraft builder, the Defense Evaluation and Research Agency (DERA), accepted and integrated the CEASE experiment hardware onto STRV-IC

The Naval Research Laboratory's Coherent Electromagnetic Radio Tomography/Profiling the Limb with Ultraviolet Sensors (CERTO/PLUS) experiment will provide measurements of the integrated electron density of the ionosphere in the satellite orbit plane. CERTO/PLUS has been manifested on the STRV-ID spacecraft. It will also provide a database for global models of the ionosphere and will test tomographic algorithms for reconstruction of ionospheric densities and irregularities. Both STRV IC and ID are spin-stabilized, 100kg-class spacecraft.

Both spacecraft (STRV IC and ID) were launched into geosynchronous transfer orbit on an Ariane 5 launch vehicle on 15 November 2000 from French Guiana. A major anomaly occurred on the STRV-1D spacecraft on 1 December 2000. Both receivers were found to be in the unpowered state, even though the spacecraft design is supposed to protect against this configuration. Shortly thereafter, that same anomaly also occurred on the 1C spacecraft. The situation looks bleak, but DERA's working hard to find a solution.

- *LtCol David Parris, Chief, Tri-Service Spacecraft Division, SMC/TELS, DSN 263-6623, (505) 853-6623*

SAVE (S99-1)

The Los Alamos National Lab's Space and Atmospheric Burst Reporting System (SABRS) Space Validation Experiment (SAVE) shall demonstrate a low cost, integrated Nuclear Detonation

(NuDet) detection system for detecting upper atmospheric and space detonations. The mission will verify the ability of the systems to meet mission sensitivity requirements while simultaneously producing acceptable low false alarm rates in the presence of a complex natural space environment. This will be done through the utilization of a new integrated packaging design and an advanced coincidence scheme.

SAVE is currently in the breadboard stage and is preparing for the Critical Design Review (CDR) to occur on 15 May 2001. SAVE ranked #22 of 40 on the 1998 SERB list and is scheduled to fly on either Defense Support Program (DSP) Flight 22 or 23 as a piggyback experiment.

- Lt Lee Philley, Mission Manager, SMC/TELO, DSN 246-6406, (505) 846-6406

PLANNED MISSIONS

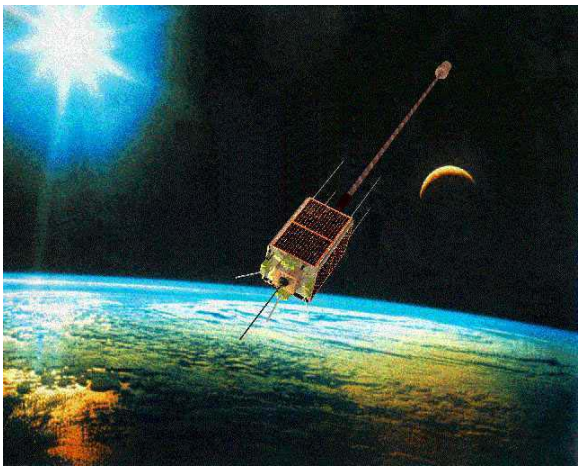
NASA/STP Kodiak Star

Kodiak Star, the first planned orbital launch from the new Kodiak Launch Complex in Alaska, will be a NASA collaborative mission with STP. The payload consists of four small satellites to be launched aboard a Lockheed Martin Athena I launch vehicle. The Athena I being used for this launch was reassigned from NASA's Vegetation Canopy Lidar (VCL) mission that is under review pending resolution of technical challenges associated with developing the science instruments.

NASA's spacecraft in the Kodiak Star mission is Starshine 3, a satellite program developed by the Rocky Mountain NASA Space Grant Consortium and built by the Naval Research Laboratory. The Starshine 3 satellite, about one meter in diameter and weighing about 200 pounds, is covered with front-surface aluminum mirrors. They were machined by technology students in Utah and polished by participating grade schools from all over the world. Once the satellite is in orbit, the students will visually track the satellite and report their findings on the project's web site. The high inclination that can be achieved by launching from Kodiak Island, AK, will allow students in Alaska, northern Canada, the British Isles, Scandinavia, and Russia who cannot see the Starshine satellites deployed in lower latitude orbits to participate in the project.

PICOSat, the primary DoD satellite, is on contract with Surrey Satellite Technology Limited (SSTL) of Guildford, UK. The fully integrated spacecraft completed all system level environmental testing in June 1999. After completion of the spacecraft, the PICOSat Flight Readiness Review was held at Kirtland Air Force Base, New Mexico, on 19 August 1999. The satellite was deemed prepared for

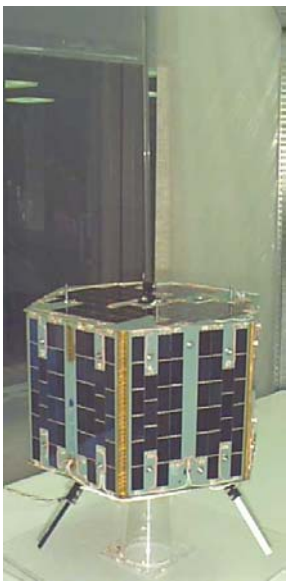
launch pending minor outstanding issues and identification of a viable launch vehicle. PICOSat is currently in storage at the SSTL facility in the UK awaiting launch.



PICOSat is partially funded through the Foreign Comparative Test (FCT) program. The four SERB experiments manifested on this mission are the **P**olymer Battery Experiment (PBEX), **I**onospheric Occultation Experiment (IOX), **C**oherent Electromagnetic Radio Tomography (CERTO), and **O**ptical Precision Platform Experiment (OPPEX). PBEX is a solid-state polymer battery with virtually limitless charge/discharge cycles and other space-favorable characteristics. The CERTO and IOX experiments measure electron content and densities in the ionosphere. OPPEX as an experimental platform, will demonstrate active and passive vibration isolation for future precision instrument applications.

The second DoD spacecraft is a Prototype Communications Satellite (PCSat), operating in the amateur radio band, designed and manufactured by Midshipmen of the United States Naval Academy. It will become part of the amateur radio community's Automatic Position Reporting System (APRS) in low earth orbit receiving digitized identity and position data from amateur radio operators and transmitting it to one or more ground stations.

The third DoD spacecraft is Sapphire, a micro-satellite designed and built by students at Stanford University and Washington University-St. Louis. The primary mission of Sapphire is to space-qualify two sets of "Tunneling Horizon Detector" infrared sensors designed and built by the Jet Propulsion Laboratory and Stanford University. Secondary experiments include a digital camera and voice synthesizer.



The Athena I will first deploy PICOSat into an 800 km circular orbit inclined at 67 degrees. Next, Sapphire will be deployed into the same orbit with PCSat close behind. Finally, the Athena I will then lower its orbit to deploy Starshine into a 470 km, 67 degree inclination circular orbit. The Kodiak Star is targeted for a 31 August 2001 launch.

- *Lt Jeff Zdenek, Mission Manager, SMC/TELO, DSN 246-9439, (505) 846-9439*

PLANNED SECONDARIES

COSMIC

The Constellation Observing System for Meteorology, Ionosphere and Climate (COSMIC) was ranked 8th by the 1999 SERB. This constellation of six satellites in three orbital planes will make use of recent developments in remote sensing, communications technology, and computing to solve some of the most important geo-scientific issues today. Each spacecraft will carry three science payloads for weather and space weather research and prediction, climate monitoring, and geodesy. These payloads are: 1) GPS occultation receiver, 2) Tiny Ionospheric Photometer (TIP), and 3) Triband Beacon Transmitters (TBB). The COSMIC system includes the LEO satellites, ground data reception and spacecraft control stations, data analysis centers and the data communications networks.

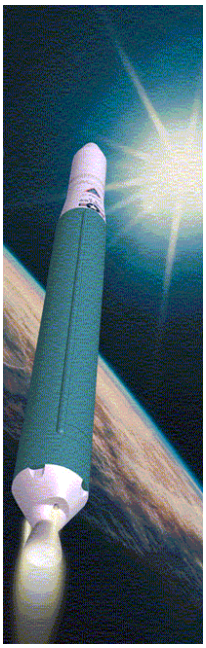
Because of the scientific and educational merits of COSMIC, the National Science Council (NSC) of Taiwan has committed approximately $80 million for the project. Other COSMIC partners include the University Corporation for Atmospheric Research (UCAR), Taiwan's National Space Program Office (NSPO, the Jet Propulsion Laboratory (JPL), the Naval Research Laboratory (NRL), the University of Texas, the US National Science Foundation (NSF), the National Aeronautics and Space Administration (NASA), the National Oceanographic and Atmospheric Agency (NOAA), the Office of Navy Research (ONR), and the United States Air Force.

COSMIC presently plans to launch on a Minotaur launch vehicle in early 2004 out of the Space Systems International port at Vandenberg AFB.

- *Lt Demian Bailey, USN, Mission Manager, SMC/TELO, DSN 246-8704, (505) 846-8704*

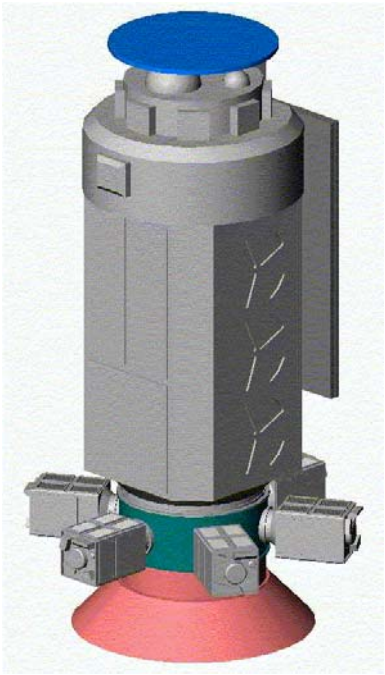
FUTURE MISSIONS

Medium Launch Vehicle – 2005



Thanks to the Air Force Space Command, STP is supplied with a

Medium Class Launch Vehicle every 4 years for SERB payloads. The next launch will be on a Delta IV-Medium in the 1st quarter of fiscal year 2005. This mission has been temporarily named "MLV-05". STP has initiated mission design activities and has defined a baseline mission. This baseline mission will be studied by Boeing and the EELV SPO to determine feasibility. Upon conclusion of this effort, the manifest will be announced. The current baseline is for an Eastern Range launch to LEO. Up to 6 separate spacecraft will be deployed from an EELV Secondary Payload Adapter (ESPA) ring (a notional picture of the payload stack is attached). After successful separation, the primary payload will be taken to GTO, concluding the launch phase of the mission. The RSC may operate some of the secondary spacecraft.



- *Capt Mark Mocio, Mission Manager, SMC/TEL, DSN 246-9323, (505) 846-9323*

STP Investigates Expanded Role as Single DoD Manager for Secondary Payloads

Based on NASA requests to use excess payload capacity on Air Force launch vehicles, the Assistant Secretary of the Air Force for Space Plans and Policy convened a meeting to identify a uniform approach for manifesting DoD secondary space payloads. An action from the meeting was to identify a central organization to manage all secondary payloads for DoD.

Presently, no ***single***, centralized organization exists within DoD that is responsible for managing spaceflight for non-primary space payloads. With the evolution of the EELV program, it has become apparent that a great deal of performance margin will exist on many flights; thus, the opportunity to accommodate secondary payloads exists at unprecedented levels. As a result, the need has been identified for a single, centralized organization within the DoD to coordinate all secondary payloads requiring access to space using this excess performance margin (and on any other DoD LV margin). STP was asked to investigate being this single "one-stop shop."

STP currently provides (or acquires) all functions necessary to fly DoD R&D payloads. Because these payloads come to STP with a wide variety of needs, STP provides a "shopping list" of available services including:

- Assistance in developing payload requirements including Experiment-to-SC ICD's, flight operations requirements, and data distribution requirements
- "Bundling" of synergistic payloads to improve science value due to

simultaneous observations by multiple instruments

- Mission design including SC, LV, and flight operations trades
- Frequency management and clearances
- Acquisition management for SC, LV, etc.
- Launch site processing and launch operations
- Flight operations and data distribution
- End-of-Life planning and execution

The proposed process for satisfying the requirements of secondary payloads that fall outside the Space Experiments Review Board (SERB) is simply an expansion of the current STP process. STP would consider the requirements of a larger group of payloads seeking spaceflight, i.e., DoD SERB payloads plus those brought by non-SERB customers.

FUTURE SHUTTLE MISSIONS

SIMPLEX on

STS-104 (ISS-10-7A)
Atlantis (OV-104)
&
STS-107 (Research Mission 1)
Columbia (OV-102)

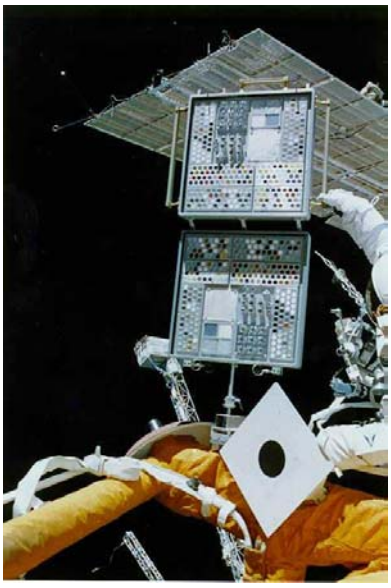
Both STS-104 & STS-107 will serve as targets for yet another iteration of the Shuttle Ionospheric Modification with Pulsed Localized Exhaust (SIMPLEX) experiment. SIMPLEX has no flight hardware, but requires orbiter Orbital Maneuvering System (OMS) firings to create ionospheric disturbances for observation by four SIMPLEX radar sites in Massachusetts, Puerto Rico, Peru, and the Marshall Islands. The experiment records and processes data from the complex interactions of exhaust vapors with the background atmosphere. This data will help us to someday detect, identify, and track the flight of unfriendly space vehicles by using instruments to characterize and interpret the vehicle's exhaust plume.

SIMPLEX has been manifested as an experiment of opportunity on STS-104, which means OMS firings will be scheduled and executed provided sufficient excess propellant exists during the mission. When possible, STP prefers to manifest SIMPLEX as a regular payload, thereby ensuring sufficient propellant will be set aside for the execution of one or more SIMPLEX firings. Fortunately, this condition should be the case for STS-107. STS-104 is scheduled to launch NET 8 June 2001 while STS-107 is scheduled to launch 25 October 2001.

- Capt Don Hill, Chief, DoD Shuttle/ISS Integration & Ops, SMC, OLAW (TELH), NASA JSC, TX, (281) 483-3425

MISSE on

STS-105 (ISS-11-7A.1)
Discovery (OV-103)



The Materials on the ISS Experiment (MISSE) sponsored by the AFRL Materials and Manufacturing Technology Directorate (ML) is the second STP payload planned for operation aboard the ISS. The objective of MISSE, which also flew on MIR, is to investigate the effects of the space environment on various materials to be utilized in future spacecraft and space vehicles. Over 1500 material specimens will be placed in 4 separate Passive Experiment Carriers (PECs) that will be installed externally on the ISS.

Two of the PECs are on schedule for ascent to the ISS on STS-105 now scheduled for 12 July 2001. They will be retrieved and replaced with 2 new PECs after 1 year on orbit. The PECs are passive and do not require power nor data downlink/uplink.

MISSE is being developed by a large consortium of organizations including AFRL/ML; Boeing; Hughes, the Aerospace Corporation; and NASA's Glenn Research Center, the Marshall Space Flight Center, the Johnson Space Center, and the Langley Research Center, which serves as the primary integrator.

- Capt Tom Hoge, DoD Manned Space-flight Payloads Manager, SMC, OLAW (TELH), NASA JSC, TX, (281) 483-3490

MACE II on

ISS Increment 1

All systems are now "go" for the continuing operations of the Middeck Active Control Experiment (MACE II) aboard the International Space Station. The first experimental payload aboard the ISS experienced a shaky start when MACE refused to accept the experiment protocols during initial operations at the start of the new year. A few weeks of troubleshooting finally paid off when the failure was traced to a bad protocol disk. Fortunately, there were two copies of the disk aboard so nominal operations could resume.

MACE is currently scheduled to be operated only until the end of Increment 1 (8 March 2001), but a request was submitted to NASA by this office to extend operations through

increment 2 (12 July 2001) to make up for lost ops time.

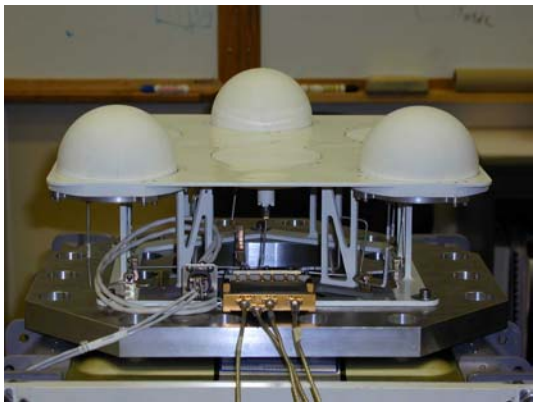
The primary objectives of MACE, which flew on STS-67 in March 1995, are to validate, in a micro-gravity environment, advanced modeling and control designs for adaptive neural net control and multi-body dynamics and control.

AFRL functions as the lead payload developer with contributions from the Massachusetts Institute of Technology, the University of Michigan, and Virginia Tech.

- *Capt Tom Hoge, DoD Manned Space-flight Payloads Manager, SMC, OLAW (TELH), NASA JSC, TX, (281) 483-3490*

MSTRS on

STS-107
Columbia (OV-102)



Scheduled for flight in October 2001, the Miniature Satellite Threat Reporting System (MSTRS) will lift-off aboard Columbia as a roof-mounted SpaceHab Inc. payload. The MSTRS payload is a subset of the Satellite Threat Warning and Attack Reporting technology development program (STW/AR). The MSTRS payload will detect and identify the approximate source of RF transmissions tracking or interfering with the operation of a spacecraft. It will geolocate the RF source, and pass the location information to the spacecraft processor for relay to the ground. The MSTRS payload employs dual three-element interferometer direction-finding arrays, one covering the low band and the other covering the high band. The MSTRS hardware also includes a microwave receiver, hard drive, and LNA assembly.

When MSTRS launches aboard Columbia this fall, it will represent the first time STP has utilized SpaceHab Inc for integration and flight of an external payload. If all goes well, the flight will serve as a pathfinder for future STP payloads wishing to take advantage of the SpaceHab option.

- *Capt Don Hill, DoD Shuttle/ISS Integration & Ops, SMC, OLAW (TELH), NASA JSC, TX, (281) 483-3425*

TECHNOLOGY DEVELOPMENT

ESPA

STP has teamed with AFRL/VS to design, build, and fly the EELV Secondary Payload Adapter (ESPA). ESPA capitalizes on payload margin on

EELV-Medium boosters to carry up to six small satellites in addition to the large primary payload. The primary payload can weigh up to 15,000 pounds. Each secondary payload may weigh as much as 400 pounds and is limited to a usable volume of about 24" x 24" (base) x 38" (height).

The ESPA Critical Design Review was held on 18 January 2001 in El Segundo. Current plans call for completion of ESPA structural qualification testing by late 2001, and the first flight unit could be built as early as January 2002.

The first flight of ESPA is planned on the STP EELV mission scheduled for FY 2005. The primary and secondary payloads for this mission will be determined based on the November 2000 SERB results. However, since ESPA can be ready to fly as early as late 2002-early 2003, STP will be positioned to take advantage of an earlier flight opportunity (NASA or commercial, for instance) should one arise.

- Lt Jeremy Goodwin, Project Manager, SMC/TELS, DSN 263-5873, (505) 853-5873

Bridge Launch System (BLS)

The Bridge Launch System is a developmental effort to build a structure capable of interfacing between a small payload and a Mission Peculiar Support Structure (MPESS). The BLS is being developed by NASA/GSFC through STP sponsorship. This additional capability will give STP an increased flexibility in manifesting payloads. The BLS will consist of a pallet, avionics, and the ejection system component of the Shuttle Hitchhiker Experiment Launch System (SHELS). The BLS ejection system will use a simple Marman Band and pyrotechnic bolt cutter interface and will be capable of ejecting a payload up to 500 pounds at an adjustable velocity between 1 and 4 feet per second. It will also provide more volume to a payload than the traditional hitchhiker ejection systems or SHELS.

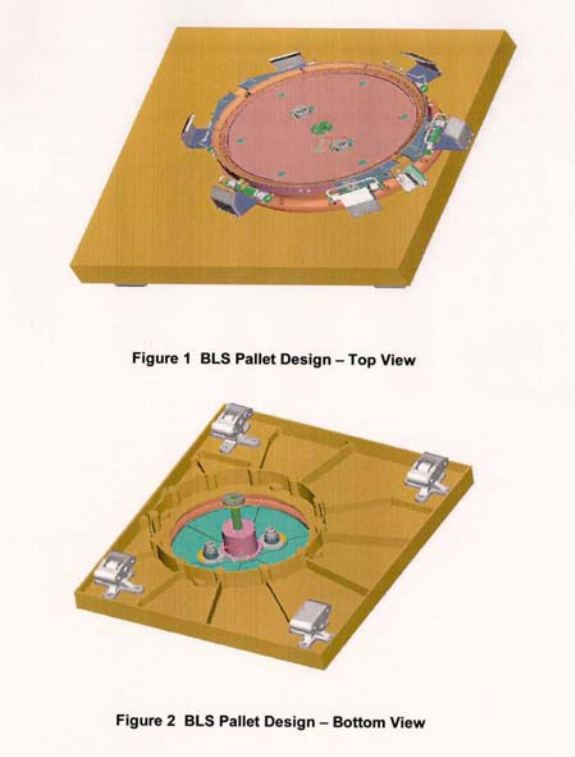


Figure 1 BLS Pallet Design – Top View

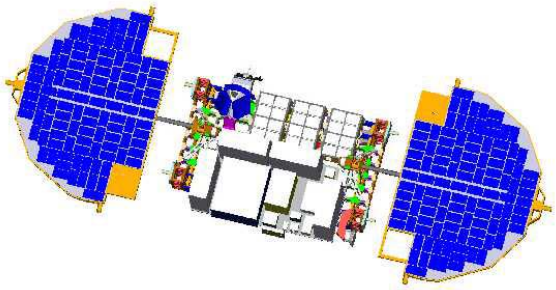
Figure 2 BLS Pallet Design – Bottom View

- Capt Don Hill, Chief, DoD Shuttle/ISS Integration & Ops, SMC, OLAW (TELH), NASA JSC, TX, (281) 483-3425

SPARTAN 401

STP is continuing to explore the feasibility and cost-effectiveness of the development and utilization of a standardized, re-usable bus that can be deployed from the Shuttle cargo-bay and retrieved on a later Shuttle flight. Known as Spartan 401, STP funded a Phase-A feasibility study of the concept

back in 1999. The study was conducted by the SMC OL-AW (SMC/TELH) office at Johnson Space Center (JSC), TX and was supported by the SPARTAN Project office at Goddard Space Flight Center (GSFC).



The study focused on a SPARTAN 401 mission that could accommodate at least eight experiments for a year on orbit, with an additional 6-month contingency. The Spartan 401 would be required to support viewing orientations of Nadir/Earth limb or Solar, with up to 750 watts of experiment power, 500 Kbps of experiment telemetry, and a propulsion system that could adjust from Shuttle orbits up to 600 km circular, or 350 x 900 km elliptical orbit, and back to a retrievable Shuttle orbit.

The diverse and challenging requirements of STP were rolled into the SPARTAN 401 carrier requirements and the mission concept. The product of these requirements was a highly versatile, reusable spacecraft bus capable of carrying up to 2000 lbs of payload mass. In addition, the study found no technical risks that would restrict the development and flight of the SPARTAN 401. The development schedule of approximately 3 years and a refurbishment/reflight schedule of 1 year would be compatible with other methods that STP has to launch experiments into space. Unfortunately, the development cost of approximately $50M (STP's 'share' of the total development cost of $100M) and a reflight cost of $14M represent a challenge to STP given current and projected STP funding profiles. As a result, STP cannot proceed on its own with a Spartan 401 development. Still, STP remains committed to the Spartan 401 concept and would be willing to enter into funding partnerships with programs that might benefit from a Spartan 401 spacecraft.

- Capt Don Hill, Chief, DoD Shuttle/ISS Integration & Ops, SMC, OLAW (TELH), NAA JSC, TX, (281) 483-3425

REMINDER TO EXPERIMENTERS

In accordance with AFR 80-2, the new AFI 12-1202, and STP MOAs, all experiments that utilize STP funds require After Action Reports. A preliminary report is due **no later** than 6 months after launch. STP requires an updated status report **annually** thereafter upon submission of the preliminary report. A final After Action Report is due 6 months **after completion** of experiment operations. The standard format for the After Action Report is the DD Form 1721-2, which is available upon request or at www.safaq.hq.af.mil/aqsl/spacetest.
There are a few overdue After Action Reports and STP would appreciate the experimenters' cooperation in closing them out.

In addition, an Experiment Requirements Document (ERD) is one of the most valuable documents in the mission planning process. While the Request for Spaceflight (DD form 1721)

provides basic information about an experiment's requirements, it is not sufficient to support the mission planning process beyond a very preliminary assessment. In the past, ERDs were only generated when mission planning was nearly complete and usually only when the ERD was needed for the acquisition process (i.e., the Request for Proposal phase). The lack of ERDs has made the initial mission planning process much more difficult. The result has been missed flight opportunities (based on outdated or misleading Form 1721 info) or a tedious (for both parties) series of phone calls and e-mails to the experimenter to get additional data needed to complete the mission planning process.

STP generated two ERD templates that will help you refine your true experiment requirements (vice goals or desires) and get you thinking about areas that you may not have considered thus far in your planning (such as on-orbit operations scenarios). The full ERD template should be prepared for all experiments that are past the preliminary design review (PDR) stage. This detailed ERD addresses all the information that will be needed to acquire a spacecraft to fly your experiment. The Experiment General Requirements Document (EGRD) is a summary version of the ERD tailored for experiments that are only in the concept stage (prior to experiment PDR) and contains less detailed information about the experiment. STP needs an ERD or EGRD for all SERB listed experiments. Please contact Ms Sam Sims (505-846-7047, or email Eleni. Sims@kirtland.af.mil) for a copy of the ERD templates. We will be more than happy to assist you in completing your ERD. WITHOUT AN ERD, IT IS MUCH MORE DIFFICULT FOR STP TO FIND AN OPPORTUNITY TO FLY YOUR EXPERIMENT - PLEASE COMPLETE YOURS AS SOON AS POSSIBLE!!

NOTICE: Please be sure to fax back the information sheet on the front of the newsletter or notify us via email/phone of your new mailing address and email address so that SMC/TEL may ensure that the STP Newsletter distribution list remains up to date. This will help us better keep track of our customers and allow our customers to know what STP is working on.

In addition, if you no longer want to receive our newsletter, or you know someone who should be added to our distribution list, please feel free to let us know. You may annotate this information on your return fax sheet or give us a call.